

**Panel Scientific and Technical Review**  
(Note: Review comments will be anonymous, but public.)

**Proposal number: 2001-F210**

**Short Proposal Title: Trophic transfer and Sublethal Effects of Pesticides and Metals**

**1a) Are the objectives and hypotheses clearly stated?**

***Summary of Reviewers comments:***

The reviewers felt the objectives and hypotheses were clearly stated.

***Panel Summary:***

Yes, the objectives are clearly stated. However, the rationale for examining the interaction of metals and pesticides needs clarification.

**1b1) Does the conceptual model clearly explain the underlying basis for the proposed work?**

***Summary of Reviewers comments:***

Reviewers differed. One reviewer felt that the conceptual model illustrates the trophic level represented by each species to be studied and their associated bioaccumulation pathways. The other reviewer felt the conceptual model does not appear to describe how distinctions will be made between the potentially confounding effects of the various contaminants being evaluated.

***Panel Summary:***

Yes, the proposal does describe how studies will be used to evaluate bioaccumulation, but the model does not address how to quantify the main and interactive effects from among the mixture of contaminants.

**1b2) Is the approach well designed and appropriate for meeting the objectives of the project?**

***Summary of Reviewers comments:***

It is not clear how a reference site will be chosen. It may be difficult to find a site in the Delta that is not impacted by the contaminants, which will make determination of the influence of pesticides and metals on population dynamics difficult to determine. The controlled feeding studies in the lab are an important component, but it is not clear how the experimental design will address the many potential combinations of pesticides and heavy metals and their relationship to acute and chronic toxicity impacts.

***Panel Summary:***

No, several issues were identified: lack of reference site; no methodology for distinguishing impacts from multiple stressors; dietary exposure study (task 4a) description vague (mixtures, concentrations, environmental relevancy lacking); lack of clarity on which pesticides would be monitored or evaluated-need to specify contaminants; question the selection of salmon because amphipods are not an important diet element and no linkage shown between salmonid diet and sediment contaminants

Task 1: Some panelists were concerned that field BAFs do not prove dietary uptake for pesticides, others felt this is a satisfactory working hypothesis for metals and Corbicula.

Task 2 and 3: Some panelists were concerned on lack of causality assessment, others felt "co-variance" analysis might be useful. All felt too few sites were proposed to support potential conclusions. The need for definitive "answers" versus "trends" was debated. The suggestion in the proposal is that causality will be determined, but panelists were very skeptical that this would be achieved. Empirical relationships may help direct future work leading to more definitive causal relationships.

**1c1) Has the applicant justified the selection of research, pilot or demonstration project, or a full-scale implementation project?**

***Summary of Reviewers comments:***

Yes

***Panel Summary:***

This is a RESEARCH effort

**1c2) Is the project likely to generate information that can be used to inform future decision making?**

***Summary of Reviewers comments:***

This proposal would provide a wide variety of information that could be useful to future decision making. Since the investigators are trying to address many contaminants at once, a more refined research program would likely be needed to determine which contaminants are causing any effects that are observed.

***Panel Summary:***

Project will provide useful, but not definitive information. Additional research will be necessary.

**2a) Are the monitoring and information assessment plans adequate to assess the outcome of the project?**

***Summary of Reviewers comments:***

The design of the field-monitoring program meets the goals of the project.

Collection of monthly samples at four different sampling sites provides for some measure of spatial and temporal distribution of contaminants, but the sampling regime may not be adequate since the exact number of contaminants being assessed does not appear to be described. The determination of a reference site is not discussed in enough detail to determine the adequacy of that aspect of the project.

***Panel Summary:***

The proposal is limited to using DWR sampling sites. The proposal does not mention or measure biotransformation products of pesticides. Contaminants not defined, nor is a reference site. The project's results may be subject causality versus correlation issues.

**2b) Are data collection, data management, data analysis, and reporting plans well described, scientifically sound and adequate to meet the proposed objectives?**

***Summary of Reviewers comments:***

There is a very brief description of data handling and storage.

***Panel Summary:***

(see above comments)

**3) Is the proposed work likely to be technically feasible?**

***Summary of Reviewers comments:***

Yes, this is technically feasible.

***Panel Summary:***

The work outlined is technically feasible, but completing the work will not allow them to definitively answer their objectives. This does not mean useful information will not be obtained. More controlled lab studies are needed.

**4) Is the proposed project team qualified to efficiently and effectively implement the proposed project?**

***Summary of Reviewers comments:***

Extremely qualified to conduct this research.

***Panel Summary:***

Yes, applicants are qualified, but team could benefit from someone with bioaccumulation expertise.

**5)Other comments**

Technical Reviewers Comments: "EXCELLENT" and "FAIR": Reviewers differed as to level of review and expertise. One reviewer stated that there was not enough detail provided in the project description to determine whether this endeavor will produce statistically meaningful results.

The panel felt that the scope was too ambitious and there were limitations in study design when compared to objectives and hypotheses. However, the effort will still produce useful information.

Biotransformation issue is key and must be considered. "Trophic transfer" appears in the title, but is not thoroughly examined.

**Overall Evaluation**  
**PANEL SUMMARY COMMENTS**

The panel agreed that complementary lab and field approaches are needed to answer the type of questions posed. Given the experience of the applicants, the overstatement of ability to achieve objectives is of concern. The ability to evaluate trophic transfer appears to be very limited. Bioaccumulation may not be measurable for many of the pesticides due to rapid biotransformation and the inability to quantify metabolites.

There was a minority opinion on the panel for a FAIR rating based on the inability of the experimental design to meet project objectives for all reasons noted above.

The proposal does not address how to quantify the main and interactive effects from among the mixture of contaminants.

Summary Rating

Excellent  
Very Good  
Good  
Fair  
Poor

Your Rating: GOOD